





Alessandro Casa

CONTACT INFORMATION

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RESEARCH INTERESTS

Applied statistics; Latent variable models; Nonparametric statistics; Clustering; Computational statistics; Density estimation; Dimensionality reduction techniques; Graphical models; Chemometrics; Bayesian statistics.

CURRENT POSITION

Postdoctoral research fellow since Nov. 2019
School of Mathematics and Statistics, University College Dublin
Affiliated with: Vistamilk SFI Research Centre
Insight SFI Research Centre for Data Analytics
Supervisor: Prof. T.B. Murphy

EDUCATION

Ph.D. in Statistics Oct. 2016 - Feb. 2020
University of Padova
Thesis: *Climbing modes and exploring mixtures: a journey in density-based clustering*
Supervisor: Prof. G. Menardi and Prof. J.E.Chacòn (co-supervisor)

Master degree in Statistical Sciences Oct. 2014 - Sept. 2016
University of Padova
Final grade: 110/110 cum laude
Thesis: *Semi-supervised detection of collective anomalies using non-parametric methods with an application to particle physics* (written in italian)
Supervisor: Prof. G. Menardi

Bachelor degree in Statistics, Economics and Finance Oct. 2011 - July 2014
University of Padova
Final grade: 110/110 cum laude
Thesis: *Dimension reduction for model-based clustering: a simulation study and an application to genetic data* (written in italian)
Supervisor: Prof. G. Menardi

PUBLICATIONS

- Working paper**
- Stakia A., Dorigo T., Casa A., [...], Vischia P.
AMVA4NewPhysics: Advanced multi-variate analysis methods for new physics searches at the Large Hadron Collider
 - Frizzarin M., O'Callaghan, T.F., Murphy, T.B. & Casa, A.
Predicting dairy cow feeding regimens from milk spectra
 - Frizzarin M., Gormely I.C., Berry D.P., Murphy T.B., Casa A. & McParland S.
Global and local statistical approaches for predicting dairy cow milk quality traits from routinely available milk spectra
 - Cappozzo A., Casa A. & Fop M.
Matrix-variate data sparse Model Based Clustering
 - Casa A., Cappozzo, A. & Fop, M.
Group-wise shrinkage for multiclass Gaussian Graphical Models

Submitted preprints

- Casa A., Bouveyron C., Erosheva E. & Menardi G. (2021+)
Co-clustering of time-dependent data via Shape Invariant Model
Preprint available at: <https://arxiv.org/pdf/2104.03083.pdf>
- Casa A., O'Callaghan T.F. & Murphy, T.B. (2021+)
Parsimonious Bayesian Factor Analysis for modelling latent structure in spectroscopy data.
Preprint available at: <https://arxiv.org/pdf/2101.12499.pdf>
- Casa A. & Menardi, G. (2021+)
Nonparametric semi-supervised classification with application to signal detection in high energy physics.
Preprint available at: <https://arxiv.org/pdf/1809.02977.pdf>

Article in refereed journals

- Casa A., Fop, M. & Murphy, T.B. (2021)
Contributed discussion on: "Centered partition processes; informative priors for clustering" by Paganin, S., Herring, A.H., Olshan, A.F. & Dunson, D.B.
Bayesian Analysis 16(1), 301–370
- Frizzarin M., Gormley I.C., Berry D.P., Murphy T.B., Casa A., Lynch A. & McParland S. (2021)
Predicting dairy cow milk quality traits from routinely available milk spectra using statistical machine learning methods.
Journal of Dairy Science, <https://doi.org/10.3168/jds.2020-19576>
- Casa A., Scrucca L. & Menardi G. (2020)
Better than the best? Answers via model ensemble in density-based clustering
Advances in Data Analysis and Classification, 1–25
- Casa A., Chacón J.E. & Menardi, G. (2020)
Modal clustering asymptotics with applications to bandwidth selection.
Electronic Journal of Statistics 14(1), 835–856
- Casa A. (2018)
On the choice of the weight function for the integrated likelihood.
SM Journal of Biometrics & Biostatistics, 3(3), 1033

Book chapters

- Cabassi A., Casa A., Farcomeni A., Fontana M., Russo, M. (2018).
Three testing perspectives on connectome data.
Studies in Neural Data Science, Springer Volume 'Proceedings in Mathematics & Statistics', ISBN-9783030000394.

Refereed conference proceedings

- Casa A., Chacón J.E. & Menardi G. (2019)
Asymptotics for bandwidth selection in nonparametric clustering.
Cladag 2019 - Book of short papers.
- Casa A. & Menardi G. (2019)
Nonparametric semisupervised classification and variable selection for new physics searches.
EMS 2019 - Program and Book of Abstracts.
- Pascali G., Casa A. & Menardi G. (2019)
Co-clustering TripAdvisor data for personalized recommendations.
Book of short Papers SIS 2019. ISBN 978889191510.
- Casa A., Scrucca L. & Menardi G. (2018)
Averaging via stacking in model-based clustering.
Book of abstracts of the 4th International Workshop on Model-Based Clustering and Classification (MBC2)

- Casa A., Scrucca L. & Menardi G. (2018)
On the selection uncertainty in parametric clustering.
Book of abstracts of the European Conference on Data Analysis (ECDA).
- Casa A., Chacòn J.E. & Menardi G. (2018)
On the choice of an appropriate bandwidth for modal clustering.
Book of short Papers SIS 2018. ISBN-9788891910233.
- Casa A., Chacòn J.E. & Menardi G. (2018)
Clustering-oriented selection of the amount of smoothing in kernel density estimation.
Book of abstracts - ISNPS 2018. ISBN: 978-88-61970- 00-7.
- Casa A. & Menardi G. (2017)
Signal detection in high energy physics via a semisupervised nonparametric approach.
Proceedings of the Conference of the Italian Statistical Society "Statistics and Data Sciences: new challenges, new generations". ISBN: 978-88-6453-521-0.
- Casa A. & Menardi G. (2017)
Nonparametric semi-supervised classification with application to signal detection in high energy physics.
Books of abstracts of the International Federation of Classification Societies (IFCS).

VISITING PERIODS

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| University of Cote d'Azur Laboratory J.A. Dieudonné Visiting scholar under the supervision of Prof. C. Bouveyron | Oct. 2018 - Dec. 2018 |
| University of Perugia Department of Economics Visiting scholar under the supervision of Prof. L. Scrucca | Apr. 2018 |
| University of Cambridge Department of Pure mathematics and Mathematical Sciences Visiting scholar under the supervision of Prof. R.Samworth | Oct. 2017 - Dec. 2017 |

CONFERENCES PRESENTATIONS

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| • CASI - 41st Conference on Applied Statistics in Ireland Online [Talk] | May 2021 |
| • UCD Working Group on Statistical Learning Online [Invited seminar] | Feb. 2021 |
| • UCD Working Group on Statistical Learning Dublin [Invited seminar] | Feb. 2020 |
| • CLADAG - Classification and Data Analysis Group Cassino [Invited talk] | Sept. 2019 |
| • EMS - European Meeting of Statisticians Palermo [Invited talk] | Jul. 2019 |
| • WG19 - Working Group on Model-Based clustering Wien [Poster] | Jul. 2019 |
| • ASPD - Workshop on Advanced Statistics for Physics Discovery Padova [Poster] | Sept. 2018 |
| • MBC2 - Workshop on Model-Based Clustering and Classification Catania [Poster] | Sept. 2018 |
| • ECDA - European Conference on Data Analysis Paderborn [Talk] | Jul. 2018 |
| • SIS - 49th Scientific meeting of the Italian Statistical Society Palermo [Talk] | Jun. 2018 |

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| | <ul style="list-style-type: none"> • ISNPS - 4th Conference of the International Society for Nonparametric Statistics Salerno [Talk] Jun. 2018 • SIS - Intermediate conference of the Italian Statistical Society Florence [Talk] Jun. 2017 |
| | Other presentations <ul style="list-style-type: none"> • Vistamilk Annual Conference Online Mar. 2021 • Vistamilk SFI Site Review Online Oct. 2020 • Start Up Research - Follow up presentation (joint with A.Cabassi) Palermo Jun. 2018 |
| COMPUTER SKILLS | OS and Applications: Mac OS, Microsoft Windows, Linux, OpenOffice Programming languages: R (advanced), Python, SQL, Stata, SAS, C/C++ Markup: \LaTeX , HTML, Markdown |
| TEACHING | Teaching Experience University College Dublin <ul style="list-style-type: none"> • Instructor for the module STAT20060 - Statistics & Probability Level 2, Academic year 2019/2020. • Tutor for the module STAT30270/40590 - Statistical Machine Learning Level 3, Academic year 2019/2020. • Tutor for the module STAT20060 - Statistics & Probability Level 2, Academic year 2019/2020. University of Padova <ul style="list-style-type: none"> • <i>Bike sharing in Paris: a case study</i> (in italian). Specialist lecture during the class Statistica Iterazione Master degree, Academic year 2018/19. Supervising Experience <ul style="list-style-type: none"> • PhD Thesis co-supervision: Gerardina Celentano (University College Dublin, expected 2025, supervisor: Brendan Murphy) • MSc Thesis co-supervision: Giulia Pascali (University of Padova, a.y. 2018/19, supervisor: Giovanna Menardi) |
| OTHER ACTIVITIES | <ul style="list-style-type: none"> • International Workshop on Spectroscopy and Chemometrics Apr. 2021 Academic Lead of the organizing committee of the inaugural edition • VistaMilk IR Meeting 2020-Present Co-organizer of the VistaMilk Infrared Spectroscopy group monthly meeting. • Start Up Research - Follow up Jun. 2018 Follow up meeting where the research groups present and discuss the scientific output of their works after one year of research. • Start Up research Jun. 2017 Meeting where small research groups of young scholars, advised by senior researchers, are asked to develop innovative methods and models to analyze a common dataset. • Elected representative of Ph.D. students and Postdoctoral researchers in the Faculty Board (University of Padova) 2016-2020 |

- Elected representative of Ph.D. students in the Doctoral Board of the Grad School (University of Padova) 2016-2019
- Member of the Irish Statistical Association

Editorial Activities

- Referee for: Annals of Applied Statistics, Computational Statistics and Data Analysis, Journal of Dairy Science, Knowledge-based Systems, Mathematics, Social Indicators Research, Stat, Statistical Analysis and Data Mining, Statistics and Computing, WIREs Computational Statistics.

Data Analysis Contests

- Stats Under the Stars 3 Jun. 2017
Organizers: University of Florence, Italian Statistical Society
- Stats Under the Stars 1 Sept. 2015
Organizers: University of Padova, Italian Statistical Society
- Data Science Game Jun. 2015
Organizers: Google, Capgemini